4.8 HYDROLOGY AND WATER QUALITY

4.8.1 SETTING

The project area includes several major watersheds that support significant and substantial beneficial uses for both wildlife and people where sustaining water quantity and quality is an important objective. Water management in the State of California is divided between nine Regional Water Quality Control Boards (RWQCBs). Each of these is responsible for the protection of the beneficial uses of the surface and ground water in their assigned area. The fifteen different counties included in the project area encompass seven of the nine Water Board Regions. Beneficial uses are defined by the resources, services, and qualities of these aquatic systems and are the ultimate goals of protection and achieving high water quality by the State Water Resources Control Board (SWRCB) and the U.S. Environmental Protection Agency (EPA). Due to the programmatic nature of this document and the extent of the project area, all the major surface waters and their beneficial uses where not identified herein. As subsequent activities are proposed, the major surface waters and their beneficial uses of any drainages to be crossed would be identified. The hydrologic setting for the project area is broken down by Region and described below in terms of surface and groundwater resources and their respective water quality.

SAN FRANCISCO BAY REGION

Alameda, Contra Costa, Marin, San Francisco, San Mateo, and Santa Clara Counties all fall within the San Francisco Bay RWQCB's jurisdictional authority. The San Francisco Bay is the largest coastal embayment on the Pacific Coast, with an area of over 400 square miles. Both the Sacramento and San Joaquin Rivers drain to the Bay, carrying runoff from California’s Central Valley. Many smaller rivers and creeks drain from the coastal mountain areas into the Bay. The Bay is generally divided into five regions based upon differing physical characteristics—Suisun Bay, San Pablo Bay, Central Bay, Lower Bay, and South Bay. The Lower Bay extends from the Bay Bridge to the Dumbarton Bridge. This part of the Bay receives flow from no major rivers, and thus is less influenced by fresh water inflow than the north Bay regions. This area does receive runoff from extensively urbanized areas. The major drainages in this area are San Leandro, San Lorenzo, Alameda, and San Mateo Creeks, as well as the Suisan Bay, the San Pablo Bay, and the Central Bay. The South Bay extends from Dumbarton Bridge south to the mouths of Coyote Creek and Guadalupe River.

Surface Water Resources

Major surface water drainages that occur within this project region include substantial creeks that drain the Oakland and Hayward Hills within the Diablo Range (East Bay Plains), the Santa Clara Valley, and the Santa Cruz Mountains. In addition there are numerous flood control channels and drainages that drain stormwater runoff from urban areas. When subsequent activities are proposed, the beneficial uses of drainages potentially affected shall be identified at that time.

Groundwater Resources

Ground water is defined as subsurface water that occurs beneath the ground surface in fully saturated zones within soils and other geologic formations. Where ground water occurs in a saturated geologic unit that contains sufficient permeability and thickness to yield sufficient water to sustain a well or spring, it can be defined as an aquifer. A ground water basin is defined as a hydrogeologic unit containing one large aquifer or several connected and interrelated aquifers.

The groundwater aquifers in the Bay Area Region are primarily comprised of alluvial sediments deposited in the intermountain structural depression formed by the Santa Cruz Mountains and the Diablo Range. San Francisco Bay occupies the central portion of this structural depression and typically is separated from the major aquifers by a significant aquitard (layer of fine sediments that retards water transmission) formed by what is commonly referred to as “Bay Mud” (Santa Clara Valley Water District, 1989). This aquitard allows for the use of the deep aquifers in close proximity to the surface seawater body that is San Francisco Bay. Shallow and smaller unconfined aquifers do exist above the aquitard but typically have poor water quality.

Water Quality

Water quality is one of the important factors affecting the attainment of beneficial uses in San Francisco Bay. Water quality influences habitat conditions and affects the distribution and abundance of biota in the Bay. Water quality of the Bay is affected by freshwater inflows, tidal mixing, urban and construction runoff, municipal and industrial discharges, and atmospheric deposition. The water quality parameters of greatest interest for the Bay include salinity, temperature, pH, nutrients, dissolved oxygen, coliform bacteria, trace contaminants, and suspended particulates (sediment).

Suspended particulates include microorganisms and inorganic matter that may result in excessive turbidity, discoloration, or other nuisance conditions. Suspended particulate concentrations in the Bay are influenced by sediment resuspension, tidal mixing, primary productivity, and particulate loadings (erosion and sediment transport) from riverine and runoff sources. Fine particulates are transported and deposited throughout the Bay with heaviest deposits in quiescent, lower energy areas of the Bay. Suspended particulate levels attenuate the transmission of light in Bay waters. At elevated concentrations, particulates may deposit on the benthic layer, smothering bottom-dwelling organisms or causing anaerobic conditions. Construction activities that disturb land cover and expose soil layers can be substantial sources of suspended particulates.

Section 303(d) of the Clean Water Act has led to the generation of a list of water quality limited streams and other waterbodies. These waterbodies are impaired by the presence of pollutants, including sediment, and are more sensitive to disturbance. The Lower San Francisco Bay is impaired due to elevated levels of copper, mercury, nickel, exotic species, diazinon, polychlorinated biphenyls (PCBs), chlordane, DDT, Dieldrin, Dioxin, and Furan. These elevated levels are attributed to inputs from the following sources: atmospheric deposition, ballast water, industrial and municipal point sources, natural sources, non-point sources, resource extraction, and potential unknown sources (EPA, 2000).

CENTRAL COAST REGION

The Central Coast Region extends from Santa Clara County south to northern Ventura County, enclosing Santa Cruz County. The mountain ranges of Diablo, Gabilan, and Santa Lucia Ranges dominate the terrain. Between these are the broad valleys of the San Benito and Salinas River.

Surface Water Resources

Major surface water drainages that occur within this project region include substantial creeks that drain the Santa Cruz Mountains and the Ben Lomond Mountains. Principal streams of the region include the San Lorenzo, Salinas, Carmel, Santa Maria, Santa Ynez, and Pajaro Rivers. The largest stream is the Salinas, which drains approximately 40 percent (or 4,600 square miles) of the total watershed area. In addition there are numerous flood control channels and drainages that drain storm water runoff from urban areas.

Groundwater Resources

The groundwater aquifers of the area are primarily composed of continental and marine deposits and are the principal aquifers found throughout Santa Cruz and northern Monterey Counties. Groundwater throughout the Central Coast Region, except for that found in the Soda Lake Subbasin, is suitable for agricultural water supply, municipal and domestic water supply, and industrial use. Soquel Creek serves about 45,000 people in the city of Capitola and unincorporated areas of the county, including Aptos, La Selva Beach, Seacliff, Rio del Mar and Seascape. Current demand is about 5,400 acre-feet a year, and officials project demand will increase to a maximum of 7,500 acre-feet in 2030. Recharge of the aquifers occurs primarily through percolation of rainfall and infiltration of stream-flows.

Water Quality

Adequate water quality for many beneficial uses in the Central Coastal Region is in short supply. Excessive salinity or hardness of local ground waters are problems that are frequently encountered. Agricultural activities and vineyard development are dominant sources of pollution in this Region, resulting in: erosion and sedimentation; nitrate contamination; loss of riparian corridors, wetlands, and stream and floodplain functions; as well as threatening the health of the region’s numerous bays and estuaries. An additional nonpoint source of contamination is urban runoff containing oil and grease, pathogens, animal wastes, sediments, pesticides and nutrient pollution.

CENTRAL VALLEY REGION – Sacramento and San Joaquin River Basin

Sacramento County falls within the Central Valley RWQCB (CVRWQCB). The project area encompasses several major watersheds within the Sacramento River Basin. These watersheds support significant and substantial beneficial uses for both wildlife and people where sustaining water quantity and quality is an important objective. Subsequent activities could occur within the Sacramento River Basin or the San Joaquin River Basin, including all watersheds tributary to the Sacramento River and north of the Cosumnes River.

Surface Water Resources

The Sacramento River region is the main water supply source for much of California's urban and agricultural areas, and together with the San Joaquin River Basin provides 51% of the State's water supply (DWR, 1998). Surface waters potentially affected by future actions may include creeks and drainages surrounding Sacramento. Major surface waters that occur within the project area include substantial creeks that drain the Sacramento, San Joaquin and American Rivers. Additionally, the subsequent activities could cross numerous flood control channels and drainages that drain stormwater runoff from urban areas generally along the banks of major streams, washes, and rivers.

Groundwater Resources

The project area overlies the Sacramento Valley Groundwater Basin, which is a sub-section of the Greater Central Valley Basin. The water is recharged by local precipitation, contributions from peripheral basins, and through percolation from the rivers traversing the area. Beneficial use of the Sacramento Valley Groundwater Basin identified by SWRCB include municipal and domestic water supply, industrial service supply, and industrial process supply (CVRWQCB, 1998). Water quality objectives listed for groundwater include thresholds for bacteria, organic and inorganic chemical constituents, radioactivity, and taste and odor.

Water Quality

Water quality is one of the important factors affecting the attainment of beneficial uses in the Sacramento River Basin. Water quality influences habitat conditions and affects the distribution and abundance of biota in the Sacramento River and its tributaries. Contaminant issues affecting water quality and aquatic communities in the Sacramento Basin are acid mine drainage, agricultural runoff, mercury inputs, and municipal non-point source pollution (USGS, 2000). Water quality of the local surface waters is also greatly influenced by local land uses and urban runoff including storm water, irrigation water, and illicit discharges which carry contaminants to the receiving waters. Urban runoff can carry typical contaminants including pesticides, increased sediment, hydrocarbons and metals from road surfaces, nutrients, bacteria, and trash. Due to the dry summers, the initial autumn storm can carry high concentrations of the aforementioned contaminants to receiving waters and in other cases, storm water collection wells can produce direct discharges to groundwater (DWR, 1998).

Section 303(d) of the Clean Water Act has led to the generation of a list of water quality limited streams and other waterbodies. These waterbodies are impaired by the presence of pollutants, including sediment, and are more sensitive to disturbance. The Sacramento River is impaired within the project area due to sources of diazinon from a paper mill in the upper reaches of the river near Red Bluff, and resource extraction sources of mercury from abandoned mines also occurring upstream. SWRCB is in the process of establishing Total Maximum Daily Loads (TMDLs) for impaired water bodies in the state of California that will limit input of pollutants to entire river systems. The CVRWQCB will have the responsibility of reducing pollutants within their region to meet the TMDLs. Two tributaries of the Sacramento River, Chicken Ranch and Strong Ranch Slough, are also impaired due to high levels of chlorpyrifos and diazinon. These elevated levels are attributed to inputs from urban runoff and/or storm sewers and agricultural resources from aerial disposition (EPA, 2000).

CENTRAL VALLEY REGION – Tulare Lake Basin

Fresno County falls within the Tulare Lake Basin of the Central Valley Regional Water Quality Control District. This Region includes about 40% of the land in California and stretches from the Oregon border to the Kern County/Los Angeles County line. The Tulare Lake Basin comprises the drainage area of the San Joaquin Valley south of the San Joaquin River. In addition to the major rivers, the basin also contains numerous mountain streams. The westside streams derive from marine sediments and are highly mineralized, while eastside streams are fed by Sierra snowmelt and springs from granitic bedrock. Westside streams are intermittent, with sustained flows only after extended wet periods.

Surface Water Resources

The Kings, Kaweah, Tule, and Kern Rivers, which drain the west face of the Sierra Nevada Mountains, are of excellent quality and provide the bulk of the surface water supply native to the Basin. Buena Vista Lake and Tulare Lake, natural depressions on the valley floor, receive flood water from the major rivers during times of heavy runoff. During extremely heavy runoff flood flows in the Kings River reach the San Joaquin River as surface outflow through the Fresno Slough.

Groundwater Resources

The Central Valley Region is the State's largest, including the largest contiguous groundwater basin in California. The southern third of the Central Valley contains the Tulare Lake Basin, a closed hydrographic unit, except during extremely wet years. Major ground water basins underlie the valley floor, with scattered smaller basins in the foothill areas and mountain valleys. In many parts of the region, usable ground waters occur outside of these identified basins. There are water-bearing geologic units within ground water basins in the region that do not meet the definition of an aquifer.

Water Quality

Water quality is one of the important factors affecting the attainment of beneficial uses in the Tulare Lake Basin. Water quality influences habitat conditions and affects the distribution and abundance of biota in the Tulare Lake Basin. The primary contaminant issues affecting water quality and aquatic communities in the Tulare Lake Basin are agricultural runoff including pesticides, fertilizer and manure, dairies, and wastewater- treatment plants. Water quality of the local surface waters is also greatly influenced by local land uses and urban runoff including storm water, irrigation water, and illicit discharges which carry contaminants to the receiving waters. Surface water from the Sierra Nevada is of very high quality, but major changes in water quality occur when surface water enters the San Joaquin Valley. These changes are primarily due to the large amount of irrigated agriculture, which affects the quality of both surface and ground water in the valley. Urban runoff can carry typical contaminants including pesticides, increased sediment, hydrocarbons and metals from road surfaces, nutrients, bacteria, and trash. Due to the dry summers, the initial autumn storm can carry high concentrations of the aforementioned contaminants to receiving waters and in other cases, storm water collection wells can produce direct discharges to groundwater (DWR, 1998). Pollutant sources that may exist along the proposed alignment include parking lots and streets, landscaped areas, and exposed earth at construction sites.

Section 303(d) of the Clean Water Act has led to the generation of a list of water quality limited streams and other waterbodies. These waterbodies are impaired by the presence of pollutants, including sediment, and are more sensitive to disturbance. The San Joaquin River and many other waterbodies are impaired within the project area due to sources of diazinon, chlorpyrifos, boron, and selenium. The SWRCB is in the process of establishing TMDLs for impaired water bodies in the state of California that will limit input of pollutants to entire river systems. CVRWQCB will have the responsibility of reducing pollutants within their region to meet the TMDLs.

The paramount water quality problem in the Tulare Lake Basin is the accumulation of salts. Because of the closed nature of the Tulare Lake Basin, there is little subsurface outflow. Thus, salts accumulate within the Basin due to importation and evaporative use of the water. This problem is compounded by the overdraft of ground water for municipal, agricultural, and industrial purposes, and the use of water from deeper formations and outside the basin, which further concentrates salts within remaining ground water.

LOS ANGELES REGION

Los Angeles County falls within the Los Angeles Region Basin Plan. The region encompasses all coastal drainages flowing to the Pacific Ocean between Rincon Point and the eastern Los Angeles County line, as well as the drainages of five coastal islands.

Surface Water Resources

Surface water resources in Los Angeles County include creeks, rivers, and lakes. Reservoirs serving flood control and water storage functions exist throughout the region. Since the climate of southern California is predominantly arid, many of the natural rivers and creeks are intermittent or ephemeral, drying up in the summer or flowing only in response to precipitation. Annual rainfall amounts vary depending on elevation and proximity to the coast. The City of Los Angeles averages less than 16 inches per year. However, due to urban landscape watering, some water ways such as Ballona Creek and the Los Angeles River maintain a perennial flow.

The project area encompasses the watersheds of the Los Angeles, San Gabriel, and Santa Ana Rivers and Ballona Creek. The Los Angeles-San Gabriel Hydrologic Unit covers most of Los Angeles County and small areas of Ventura County. The rivers drain much of the San Gabriel Mountains to the Pacific Ocean. Ballona Creek drains central portions of the City of Los Angeles within the Santa Monica Bay Hydrologic Unit. The Dominguez Channel watershed drains a small area within Torrance to the San Pedro Bay. The Santa Ana River Hydrologic Unit encompasses much of Orange County and the San Bernardino Mountains. Flood control measures such as concrete linings have reduced much of the rivers' natural riparian habitat. Numerous smaller creeks and flood control channels exist within these watersheds. However, the project area is highly urbanized with substantial storm sewer systems in place.

The County of Los Angeles has designated numerous Significant Ecological Areas (SEAs) within the County including Ballona Creek, Baldwin Hills, Rio Hondo Spreading Grounds, and Alamitos Bay. Other wetlands or estuaries within the project area include Marina Del Rey wetlands, Los Cerritos wetlands, Anaheim Bay, Newport Bay, and the Bolsa Chica wetlands.

Groundwater Resources

Groundwater basins in the Los Angeles area include the Santa Monica Basin, Hollywood Basin, West Coast Basin, Central Basin, and the Orange County Coastal Plain Basin. Each of these basins is comprised of multiple layers of water bearing formations. Some areas may have "perched water" or shallow groundwater less than 40 feet below ground surface. Much of the shallow groundwater that is designated as a potential drinking water source occurs in the alluvial plains within sandy deposits less than 200 feet below ground surface. Most municipalities in the region augment imported water received from the Metropolitan Water District with local groundwater supplies.

Water Quality

Water quality in the Los Angeles Region is significantly affected by stormwater runoff, although point source discharges from wastewater treatment plants and industrial facilities contribute somewhat to reduced quality. Several large wastewater treatment plants operate on the coast including the City of Los Angeles Bureau of Sanitation, the Sanitation Districts of Los Angeles County, and the Orange County Sanitation District. SWRCB has compiled a list of impaired water bodies pursuant to Section 303(d) of the Clean Water Act. The list includes the Santa Monica Bay as well as the Los Angeles, San Gabriel, and Santa Ana Rivers. The source for much of the pollutants identified in the Section 303(d) list is nonpoint source stormwater runoff. Pollutants range from trash and pathogens to petroleum hydrocarbons and pesticides. Eroded soil from construction sites can enter storm drains and increase sediment loads in local creeks and rivers. The SWRCB is in the process of establishing TMDLs for impaired water bodies in the state of California which will target point source and non-point source pollution. The Los Angeles RWQCB has the responsibility of reducing pollutants to meet the TMDLs in their region.

Shallow groundwater is susceptible to surface contamination from urban and agricultural land uses as well as sea water intrusion caused by overdrafting. Several groundwater basins in the region are adjudicated and managed by Groundwater Management Districts. The Districts, as mentioned above, oversee extraction operations and recharge efforts to maintain a sustainable, safe yield.

SANTA ANA REGION

The Santa Ana Region includes the upper and lower Santa Ana River watersheds, the San Jacinto River watershed, and several other small drainage areas. It is a group of connected inland basins and open coastal basins drained by surface streams flowing generally southwestward to the Pacific Ocean. The Santa Ana region covers parts of southwestern San Bernardino County, western Riverside County, and northwestern Orange County.

Surface Water Resources

Surface waters include streams, rivers, lakes, bays, the ocean, and wetlands in the region. The Santa Ana Region is a group of connected inland basins and open coastal basins drained by surface streams flowing generally southwestward to the Pacific Ocean. Surface waters are tributary to the Santa Ana River via Temescal Creek. The Santa Ana River, the region's main surface water body, transports more than 125 million gallons per day of reclaimed water from Riverside and San Bernardino Counties for recharge into the Orange County Groundwater Basin.

Groundwater Resources

Deep alluvial valley deposits made up large groundwater basins, both in the inland valleys and on the coastal plain, basins naturally full of fresh water. Water flows of the Santa Ana River are a significant source for groundwater recharge in the lower basin, which provides domestic supplies for more than two million people.

Water Quality

The quality of the Santa Ana River is a function of the quantity and quality of the storm flow (water resulting directly from rainfall, surface runoff) and base flow. Base flow is composed of wastewater discharges, rising groundwater, and nonpoint source discharges. Nonpoint discharges include runoff from agricultural and urban areas which is not related to storm flows. As inland cities have grown, wastewater flows have increased. There are approximately 2,000 NPDES permits in effect in the Santa Ana region which regulate discharges from publicly owned treatment works, industrial discharges, stormwater runoff, dewatering operations, and groundwater cleanup discharges. Although the river is effluent dominated, its water quality has improved steadily. One of the region’s major problems has been salt balance. Salinity increases with each use of a given volume of water. The increase depends on the use, whether in the home, in industry, or for agriculture. The loss of drinking water supply wells due to organic compound contamination is a serious problem in several areas of the region, most notably Bunker Hill, Chino, and Santa Ana Forebay Groundwater Basins. In addition, there are approximately 2,000 known cases of leaking underground storage tanks in the region of which 35% have confirmed groundwater contamination.

COLORADO RIVER BASIN REGION

The Colorado River Basin Region covers all of Imperial County and portions of San Bernardino, Riverside, and San Diego Counties.

Surface Water Resources

Surface water resources in the region of the Colorado River Basin include creeks, rivers, lakes, and the Pacific Ocean. Many of the drainage basins in the region consist of coastal, intermittent waterways, responding exclusively to local precipitation. These drainages are typically dry throughout the summer months. However, even with the low annual precipitation rates, some urban streams within the region have perennial flow due to urban runoff. Several 100-year flood zones exist within the region, generally along the banks of major streams, washes, and rivers. Since the watersheds in the region are relatively short, extending to approximately 40 miles inland, flooding in the area is generally caused by local heavy precipitation. Due to the typically well-drained soils exhibiting high runoff rates and the potential for high rainfall intensities, winter storms can cause flash flooding throughout the region. Several surface reservoirs serve flood control functions in the region including Miramar, Murray, and Sweetwater Reservoirs. Upstream on the San Diego River, reservoirs such as the San Vicente and El Capitan Reservoirs provide potable water storage in addition to flood control functions.

Groundwater Resources

Generally speaking, groundwater basins exist in this region only within major river corridors. The groundwater in these areas is recharged through the river channels, which are typically shallow and limited in size. The project area encompasses the Mission San Diego groundwater basin, which underlies the San Diego River. Water extracted from this basin historically provided the bulk of San Diego’s local municipal groundwater supplies. Local groundwater resources may contain high concentrations of dissolved minerals and nitrates as a result of overlying land uses. Municipal use of much of the local water is limited without pre-treatment.

Water Quality

Water quality in the Colorado River Basin Region is significantly affected by storm water run-off, although point source discharges from wastewater treatment plants and industrial facilities contribute somewhat to reduced quality. SWRCB has compiled a list of impaired water bodies pursuant to Section 303(d) of the Clean Water Act. The source for much of the pollutants identified in the Section 303(d) list is non-point source stormwater runoff. Pollutants range from trash and pathogens to petroleum hydrocarbons and pesticides. Eroded soil from construction sites can enter storm drains and increase sediment loads in local creeks and rivers. The SWRCB is in the process of establishing TMDLs for impaired water bodies in the state of California to limit input of pollutants to entire river systems. Local RWQCBs will have the responsibility of reducing pollutants on a regional basis to meet the TMDLs.

4.8.2 REGULATIONS, APPROVALS, AND PERMITS APPLICABLE TO HYDROLOGY AND WATER QUALITY

WATER QUALITY REGULATION

Regulatory authorities exist on both the state and federal levels for control of water quality in California. The EPA is the federal agency, governed by the Clean Water Act, responsible for water quality management. All of California falls in EPA Region IX, whose office is located in San Francisco and delegates authority for water quality permitting to SWRCB.

The SWRCB, located in Sacramento, is the agency with jurisdiction over water quality issues in the State of California. The SWRCB is governed by the Porter-Cologne Water Quality Act (Division 7 of the California Water Code), which establishes the legal framework for water quality control activities by the SWRCB. Much of the implementation of the SWRCB's responsibilities is delegated to nine RWQCBs.

REGIONAL WATER QUALITY CONTROL BOARDS

The state of California is divided in nine regional water quality control boards. Each of these is responsible for the protection of the beneficial uses of the surface and ground water in the assigned area. Each RWQCB has adopted a *Water Quality Control Plan* (Basin Plan) to implement plans, policies, and provisions for water quality management. Beneficial uses described in the Basin Plans will be identified for any drainages that would be crossed by future project alignments, once known. Water quality objectives defined in the Basin Plans serve as guidelines for all point source and non-point source discharges.

NPDES Permit

The RWQCBs administer the National Pollution Discharge Elimination System (NPDES) stormwater permitting program throughout California. Construction activities of five acres or more (Phase II requirements for permitting areas between one and five acres will not be fully implemented until early 2003) are subject to the permitting requirements of the NPDES General Permit for Discharges of Stormwater Runoff Associated with Construction Activity (General Construction Permit). The project applicant must submit an NOI to the SWRCB to be covered by the General Permit prior to the beginning of construction. The General Construction Permit requires the preparation and implementation of a SWPPP. The SWPPP must be prepared before construction begins. The plan would include specifications for BMPs that would be implemented during project construction to control potential discharge of pollutants from the construction area. Additionally, the plan would describe measures to prevent pollutants in runoff after construction is complete and reference a plan for inspection and maintenance of the project facilities. Implementation of the plan starts with the commencement of construction and continues though the completion of the project. Upon completion, the applicant must submit a Notice of Termination to the SWRCB.

Clean Water Act, Section 401 Certification

If water ways or wetlands were affected by the project, a Section 401 water quality certification (or waiver) from the RWQCB would be required under the Clean Water Act and would be obtained by meeting the terms and conditions in Section 404 Nationwide Permit No. 12, as appropriate, issued by the Corps. Nationwide Permit No. 12 authorizes discharge of material for backfill or bedding for utility lines. Under Nationwide Permit No. 12 conditions, an applicant must demonstrate that any unavoidable in-channel work would occur within the state agency's preferred work windows and that all practicable erosion control measures would be implemented.

4.8.3 IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

Appendix G of the CEQA Guidelines (revised October 26, 1998) states that a project would normally result in a significant impact on hydrology or water quality of the area if it would:

- Violate any water quality standards or waste discharge requirements;
- substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted);
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off site;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site;
- create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- otherwise substantially degrade water quality;
- place housing within a 100-year flood hazard zone as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or

- cause inundation due to seiche, tsunami, or mudflow.

IMPACT MECHANISMS

Potential construction-related impact mechanisms for water quality include the following:

- Installation of fiber optic cable facilities could expose soils to stormwater runoff causing erosion and subsequent sedimentation to local and regional drainages.

- Installation of fiber optic cable facilities and associated disturbance of road embankment or channel bed and bank could induce or increase erosion within drainages. Disturbance to the geomorphic characteristics and stability of a channel bed and banks may initiate erosion in natural channels. Disturbing roadway ditches, which function as extensions of stream networks, also could result in sediment deposition into local drainages.

- Removal of riparian vegetation can weaken streambank structure and increase its susceptibility to erosion. Changes to soil stability factors can increase erosion.

- Hazardous materials associated with subsequent activities will be limited to those substances associated with construction equipment, such as gasoline and diesel fuels, engine oil, and hydraulic fluids. An accidental spill of these substances could contaminate drainages, soils, wetlands, and other environmentally sensitive areas.

- Use of guided boring equipment could result in an accidental drilling fluids spill into, or adjacent to, stream channels. Drilling fluids are composed of non-toxic drill lubricants (typically natural clay such as bentonite) and water, which are used to lubricate the bore hole and also to flush cuttings from the bore hole.

- Construction of regenerator/OP-AMP stations within a 100-year hazard area impeding or redirecting flood flows.

Impact HYD-1: Installation of fiber optic cable facilities could cause erosion and transport of sediments to local water resources during construction activities. (Potentially Significant)

There would be potential for surface runoff to transport upland construction spoils into streams, which could result in temporary increases in turbidity and sedimentation in watercourses downstream of the project. Excessive sediment in the water column (increased turbidity) can reduce channel capacity, alter drainage characteristics, affect aquatic organisms through reduced water quality, and interfere with fish feeding behavior and with photosynthesis in aquatic flora.

Sempra Communications would use construction best management practices to minimize sediment transport to streams from upland. Spoils generated during construction would be stored on the project site for a short time (generally less than one day). To minimize the exposure of sediments to runoff, Sempra Communications would make best efforts to ensure that all trenches were backfilled or properly covered at the end of each workday. Where backfilling the trench is not feasible, proper erosion control features would be established to eliminate or minimize exposure of sediments to runoff.

Construction is not expected to require work in drainages supporting sensitive resources (i.e., streams that support sensitive fish, amphibians, or other riparian and aquatic species or waters that are impaired by sediments). At stream crossings that are flowing at the time of construction Sempra Communications would attach the conduit to an existing bridge, bore under the stream, or construct an aerial crossing. In the event that boring and aerial crossings are not feasible, Sempra Communications may trench through a stream as the last alternative. As much as possible, Sempra Communications would only trench across drainages when the stream is dry, when streams are flowing during construction the mitigation below would be required.

Mitigation Measure HYD-1a: The following installation of temporary erosion control devices and water diversion techniques shall be implemented during construction to minimize erosion and sedimentation in streams that are flowing during construction. (construction related impact, particularly open trenching, plowing and directional boring through streams)

- Temporary dewatering of creeks may be required during installation of fiber optic facilities when trenching during dry conditions is not feasible. During construction within the waterway, the contractor will divert the entire streamflow around the work area in the waterway to minimize the amount of silt runoff entering the creek. Appropriate measures will be taken to maintain near normal downstream flows and to minimize flooding by using cofferdams and a temporary culvert. Diversion of streamflow will be accomplished by utilizing a barrier and temporary culvert capable of permitting upstream and downstream aquatic life movement and maintaining existing stream flow rates.

- Installation of temporary erosion control devices will be an integral part of construction and will include the use of rolling dips and waterbars, silt fencing, straw bales, riprap, detention basin, and revegetation as appropriate. Erosion control devices will be installed concurrently with construction. Erosion control measures will include protection of receiving waters from sources of sedimentation, principally, spoils and bare ground. These measures and all other permit requirements, will be included in contract specifications and will be implemented by the contractor or subcontractor.

- When the stream channel is altered during construction, its low flow channel shall be returned as nearly as possible to its natural state without creating conditions for future bank erosion, or creating a flat wide channel or sluice-like area. The gradient of the streambed shall be as nearly as possible the same gradient as existed prior to disturbance.

- Locate spoil sites such that they do not drain directly into the drainages. If a spoil site drainage into the drainage channel, catch basins shall be constructed to intercept sediment before it reaches the channel. Spoil sites shall be flattened to reduce the potential for erosion.

Mitigation Measure HYD-1b: Implement **Mitigation Measure BIO-11a.**

Any activities in stream and wetlands would be conducted in accordance with the appropriate state and federal permits and in consultation with the relevant agencies.

Significance after Mitigation: Less than Significant

Impact HYD-2: Possible long-term erosion from decreased channel stability. (Potentially Significant).

Removing riparian vegetation along drainages or disturbing the bed or bank of channels could weaken streambank structure and increase susceptibility to erosion. Disturbing the geomorphic characteristics and stability of the channel bed and banks may initiate chronic erosion in natural channels.

A significant impact could occur if large amounts of riparian vegetation were removed, if the channel bed and banks on several crossings of one channel or within one watershed were disturbed, or if sensitive crossing sites that have been disturbed mechanically were further disturbed by high-flow events before they are stabilized.

Mitigation Measure HYD-2a: Implement **Mitigation Measures BIO-2a**, **BIO-2b**, and **BIO-2c**.

Wherever feasible, avoid riparian and wetland habitats that support special-status aquatic species by establishing, maintaining, and observing exclusion zones. If avoidance of riparian and wetland habitats is possible through directional bore or jack-and-bore methods, implement Mitigation Measures BIO-2a through BIO-2c in the Biological Resources section of this chapter.

Significance after Mitigation: Less than Significant

Impact HYD-3: Possible water quality degradation from accidental spills of construction materials and equipment fluids. (Potentially Significant)

Hazardous materials associated with subsequent activities would be limited to substances associated with construction equipment, such as gasoline and diesel fuels, engine oil, and hydraulic fluids. Accidental spills of these substances could contaminate drainages, soils, wetlands, and other environmentally sensitive areas. Current spill prevention practices indicate a low probability that construction material will spill.

Mitigation Measure HYD-3a: Spill prevention and mitigation practices summarized in the following text will be enacted depending on the location and severity of the spill.

Prior to construction, crews will have containment and cleanup equipment (e.g., absorbent pads; mats; socks; pillows; granules; drip pans; and shovels) available at the staging areas and construction sites for use, as needed. Staging areas, where refueling, storage, and maintenance of equipment would take place, will not be located within 100 feet of drainages or any other body of water, or wetlands or riparian areas, to reduce the potential of contamination by spills.

During construction activities, equipment will be maintained and kept in good operating conditions to reduce the likelihood of line breaks and leakage. Fluids drained from machinery during services at staging areas will be collected in leak-proof containers and disposed of at appropriate disposal or recycling facilities. No refueling or servicing will be done without absorbent material (e.g., absorbent pads, mats, socks, pillows, and granules) or drip pans underneath to contain spilled material. If these activities result in an accumulation of materials on the soil, the soil will be removed and properly disposed of as hazardous waste.

If a spill is detected, simultaneous to implementing the containment measures, construction crews will contact the appropriate resource agency personnel. Spill areas will be restored to pre-spill conditions, as practicable, and spill documentation and reporting will be carried out.

Significance after Mitigation: Less than Significant

Impact HYD-4: Possible water quality degradation and siltation from accidental seepage or spillage of drilling fluids into streams. (Potentially Significant)

As mitigation built into the construction approach, one of the construction methods proposed by Sempra Communications to cross-flowing streams would be to install facilities under streams via directional bore. During the boring operation, drilling fluid is used to lubricate the bore and help remove cuttings from the bore-hole (see Chapter 3, Project Description for further details on directional boring). Although unlikely, the drilling fluid mixture could seep to the surface within a stream channel. Seepage which could happen if bores encounter fractures in the underlying rock, and drilling fluid pressures are great enough to allow the material to surface. Additionally, drilling fluid could be spilled from the fluid circulation system and enter local drainages.

Mitigation Measure HYD-4a: The following mitigation measure will be implemented to minimize the potential for drilling fluid seepage to streams and to ensure containment of drilling fluids within the drilling circulation system.

Prior to directional boring activities near streams, containment and cleanup equipment (e.g., certified weed-free bales, sedimentation fencing, and portable pumps) will be present for use at the staging areas and construction sites, as needed. Portable pumps will be kept on site to control seepage to the surface beyond the straw bales and to prevent the mixture from entering streams or wetlands. At high-risk boring location, damming and flume materials will be pre-staged.

During directional boring activities near streams, construction crews will monitor bentonite flow and returns so that fluid loss can be identified before the material surfaces in the stream channel. Surveillance of stream flow and wetland areas will ensure prompt detection of any bentonite release, or the release of other construction materials. Weed-free straw bales or sedimentation fences will be installed between the bore site and any flowing stream or wetland. These bales or fences will contain any of the bentonite-water mixture if it seeps from the boring site, and will prevent the mixture from entering the stream or wetland.

If a spill is detected in a flowing channel, wetland, or other sensitive resource area, drilling will cease immediately and spill prevention and control measures will be immediately enacted to safely contain and remove the spilled materials. Concurrent with implementation of the containment measures, construction crews will contact the appropriate resource agency personnel, as indicated on local, state or federal permits. If the mixture oozes to the surface in the stream or wetland channel, a pump will be used to pump it back to the drill site. If a release occurs at a high-risk boring location, the stream flow will be immediately dammed and flumed, and the bentonite will be contained and removed. Spill areas will be restored to pre-spill conditions, as practicable, and spill documentation and reporting will be carried out.

Although these measures greatly reduce the chance that drilling fluids would seep into streams, they cannot completely eliminate the risk of accidental spills which under the worst case scenario could still be potentially significant.

Significance after Mitigation: Potentially Significant

Impact HYD-5: Excavation during project construction could encounter groundwater and require dewatering. Discharge of dewatered water could adversely affect surface water quality. (Less than Significant)

Subsequent activities could involve trenching and excavation in varied terrain. Depths of excavation are typically four feet with variable depths dependent upon cover and land use. Groundwater levels vary considerably throughout the project area and depths of excavation can also vary. Potentially, in some locations excavation would encounter saturated soil conditions and required dewatering. Dewatering results in the temporary draw-down of the localized water table. Extracted groundwater may be of poor quality and, if discharged to surface waters, could degrade water quality. Approved discharge locations or disposal methods have not been identified for the project.

Groundwater would be discharged or collected and disposed off-site, in accordance with all applicable laws and regulations. If dewatered water were discharged to adjacent surface waterways, Sempra Communications would obtain an NPDES permit from the appropriate RWQCB for surface discharge, as required under Section 402 of the Clean Water Act. Receiving water quality would be maintained through appropriate treatment measures identified in the permit. These may include utilization of settling ponds or screens to reduce suspended sediment loads, or if necessary due to contaminated groundwater, use of on-site treatment systems for contaminant removal prior to discharge.

Mitigation Measure: No mitigation is required.

Impact HYD-6: Regeneration and OP-AMP stations may potentially be sited within a 100-year flood zone. (Less than Significant)

The Federal Emergency Management Administration's (FEMA) National Flood Insurance Program (FEMA, 1988) has designated 100-year flood zones nationwide. The boundaries of the 100-year flood zone are determined from a combination of precipitation data and land use characteristics and are used as a design criterion to ensure a factor of safety from flood hazard. During any given year, there is a one percent chance a 100-year flood would occur. This would be a less than significant impact because Sempra Communications' protocol specifically requires that no construction be sited in a 100-year flood zone.

Mitigation Measure: No mitigation is required.

REFERENCES – Hydrology and Water Quality

California Department of Water Resources, *The California Water Plan Update*, Bulletin 160-98, 1998

Central Valley Regional Water Quality Control Board, The 1998 303(d) List, by Waterbody. http://www.swrcb.ca.gov/rwqcb5/programs/tmdl/303d_wb.pdf.

Control Plan for the San Diego Basin (9). September 8, 1994.

Dubrovsky, Neil M., Charles R. Kratzer, Larry R. Brown, JoAnn M. Gronberg, and Karen R. Burow, *Water Quality in the San Joaquin-Tulare Basins, California, 1992-95*, U.S. Geological Survey Circular 1159, A contribution of the National Water-Quality Assessment (NAWQA) Program. http://water.usgs.gov/pubs/circ/circ1159.

Environmental Protection Agency (EPA), Office of Water, *1998 List of California Impaired Waters*, presented at the EPA Total Maximum Daily Load website for the California TMDL Program. Accessed January 4, 2000.

Los Angeles Regional Water Quality Control Board, *Water Quality Control Plan, Los Angeles Region*, 1995

Regional Water Quality Control Board – San Diego Region. *Water Quality*

Regional Water Quality Control Board, Central Valley Region (CVRWQCB) Water Quality Control Plan (Basin Plan), Central Valley Region, Sacramento River and San Joaquin River Basins. Fourth Edition, 1998.

Regional Water Quality Control Board, San Francisco Region (RWQCB), *San Francisco Bay Basin Water Quality Control Plan (Basin Plan)*, June 1995.

San Francisco Estuary Project (SFEP), *San Francisco Bay Status and Trends Report*, 1991.

Santa Ana Regional Water Quality Control Board, *Water Quality Control Plan, Santa Ana Region*, 1994

Santa Clara Valley Water District (SCVWD), *Standards for the Construction and Destruction of Wells and other Deep Excavations in Santa Clara County*. Revised June 1989.

United States Geological Systems (USGS), Sacramento River Basin NAWQA: Environmental Setting. Information available through USGS Water Center's website. Access July 5, 2000. http://water.wr.usgs.gov/sac_nawqa/envirose.html